USDA Natural Resources
Conservation Service

Ecological site R009XY025OR
Very Shallow 14-18 PZ

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General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on ridgetops, broadplains or plateaus and gently sloping areas. It is generally the intermound area in patted ground. Slopes range from 2-20 percent. Elevations range from 2000 to 5000 feet.

Table 2. Representative physiographic features

Landforms	(1) Ridge (2) Plateau (3) Mountain slope
Elevation	610–1,524 m
Slope	2–20%
Aspect	Aspect is not a significant factor

Climatic features

The annual precipitation ranges from 14 to 18 inches. It occurs mainly between the the months of October and June in the form of rain and snow. The soil temperature regime is mesic approaching frigid with a mean annaul air temperature of 47 degrees F with the extreme temperatures ranging from -16 to 103 degrees F. The frost-free period ranges from 100 to 130 days. The optimum period for plant growth is from March to mid-June.

Table 3. Representative climatic features

Frost-free period (average)	130 days
Freeze-free period (average)	0 days
Precipitation total (average)	457 mm

Influencing water features

Soil features

The soils of this site are very shallow over bassalt bedrock and are well drained. Areas of rock outcrop may occur. Typically the surface layer is an extremely stony loam or very stony silty clay loam. The subsoil is a dark reddish brown very cobbly clay loam or clay. Bedrock typically occurs at less than 10 inches. Permeability is moderate to very slow. Permeabilty is slow and the available water holding capacity (AWC) is 1 to 3 inches for the profile. The potential for water or wind erosion is moderate.

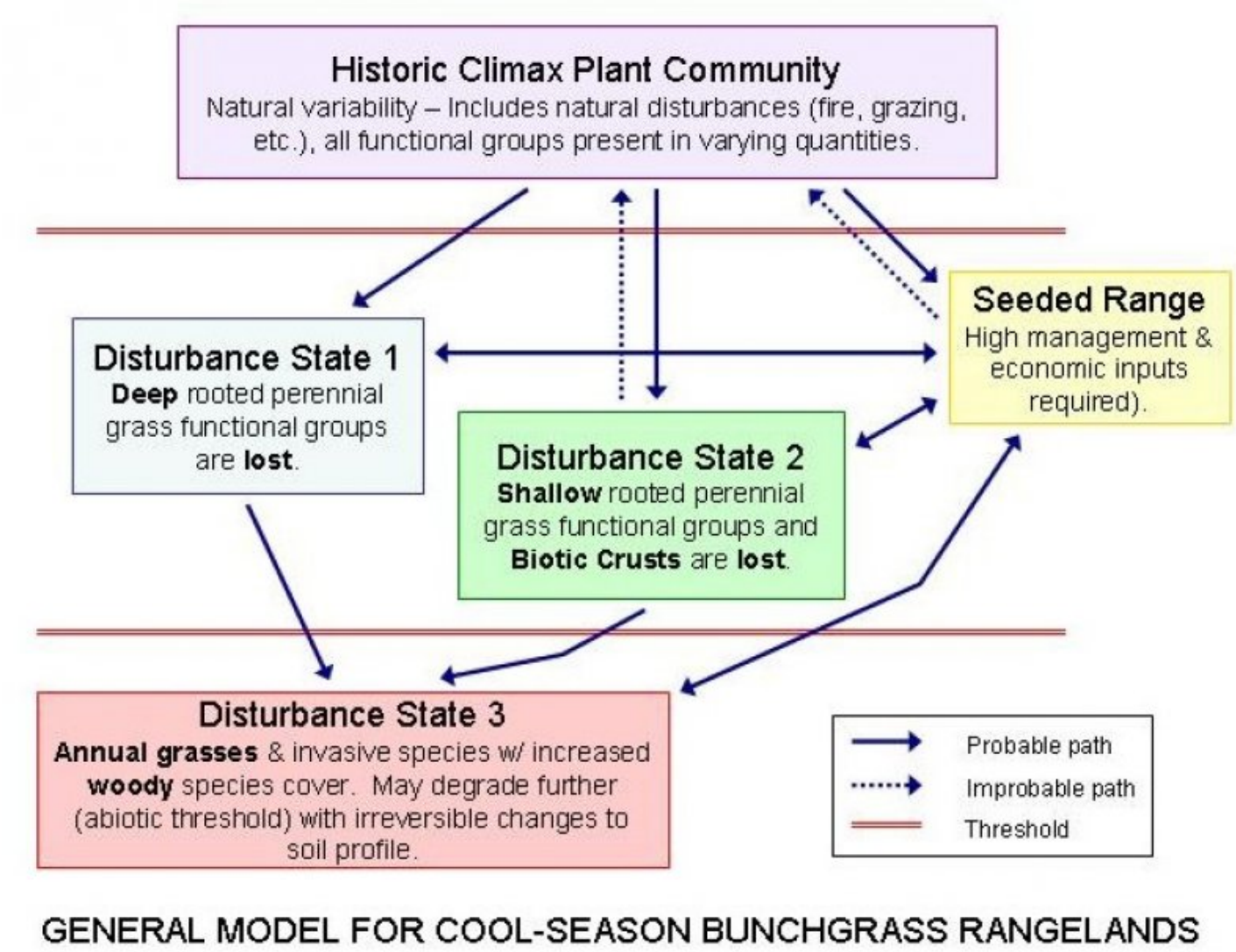
Table 4. Representative soil features

Surface texture	(1) Extremely stony loam (2) Extremely stony silty clay loam
Family particle size	(1) Clayey
Drainage class	Well drained
Permeability class	Slow

Ecological dynamics

Range in Characteristics:
Variability in plant compostion and yeild is dependant on soil depth and bedrock fracture rather than on precipitaion and elevation ranges that occur within the site. The highest yield and most bluebunch wheatgrass occurs over fractured bedrock and on soils 6 to 10 inches deep. Stiff sagebrush, when present, will also occur on soils less than 4 inches thick over unfractured bedrock.
Response to Disturbance:
Larger bunchgrasses and oatgrasses decline with prolonged overgrazing. Grazing when wet may cause some mechanical damage where the sil is soft. Some increase in Sandberg's bluegrass and bottlebrush squirreltail can occur following loss of other perennials. Increasers and invaders included cheatgrass, soft chess, bulbous bluegrass and hemizonia.

State and transition model



GENERAL MODEL FOR COOL-SEASON BUNCHGRASS RANGELANDS

State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

The potential plant community of this site is strongly dominated by Sandberg Bluegrass. Bottlebrush squirltail and bluebunch wheatgrass are common along with one spike oatgrass. Minor amounts of other bunchgrasses may occur. A variety of perennial forbs occur throughout the stand such as lomation, fleabane, and one spike oatgrass. Stiff sagebrush may occur in areas of deeper soil. Vegetaive composition is approximately 70% grasses, 20% forbs, and 10% shrubs/tress.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	287	377	466
Shrub/Vine	18	65	112
Forb	18	52	85
Total	**323**	**494**	**663**

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
2	**Perennial Deep-rooted Sub-dominant**			54–152	
	bluebunch wheatgrass	PSSP6	*Pseudoroegneria spicata*	22–90	–
	squirreltail	ELEL5	*Elymus elymoides*	22–45	–
	Idaho fescue	FEID	*Festuca idahoensis*	4–9	–
	Thurber's needlegrass	ACTH7	*Achnatherum thurberianum*	4–9	–
3	**Perennial Shallow-rooted Dominant**			224–269	
	Sandberg bluegrass	POSE	*Poa secunda*	224–269	–
4	**Perennial Shallow-rooted Sub-dominant**			9–45	
	onespike danthonia	DAUN	*Danthonia unispicata*	9–45	–
Forb					
7	**Perennial Deciduous Dominant**			9–45	
	serrate balsamroot	BASE2	*Balsamorhiza serrata*	4–22	–
	desertparsley	LOMAT	*Lomatium*	4–22	–
8	**Perennial Deciduous Sub-dominant**			4–9	
	fleabane	ERIGE2	*Erigeron*	4–9	–
9	**PPFF**			4–31	
	common yarrow	ACMI2	*Achillea millefolium*	1–6	–
	onion	ALLIU	*Allium*	1–6	–
	pussytoes	ANTEN	*Antennaria*	1–6	–
	bitter root	LERE7	*Lewisia rediviva*	1–6	–
	woodland-star	LITHO2	*Lithophragma*	1–6	–
	spreading phlox	PHDI3	*Phlox diffusa*	1–6	–
Shrub/Vine					
11	**Perennial Evergreen Dominant**			9–90	
	scabland sagebrush	ARRI2	*Artemisia rigida*	9–90	–
12	**Perennial Evergreen Sub-dominant**			9–22	
	buckwheat	ERIOG	*Eriogonum*	9–22	–

Animal community

Livestock Grazing:
This site is not a key site for grazing by livestock and should be discounted heavily when estimating stocking rates for the sounding areas. Rockiness and winter soil saturation present severe limitations. Use should be postponed until the soils are firm enough to avoid trampling damage.
Wildlife:
This site is very important as a spring forage site for deer and elk. As the snowline retreats, the abundance of Sandberg's bluegrass produced on this site provides the first green forage for these big game species. Nearby forested areas provide escape, hiding and thermal cover.
Native Wildlfe Associated With The Climax Community:
Rodents, Songhbirds, Red-tailed hawk, Coyote, Mule deer.

Hydrological functions

The soils of this site have slow infiltration rates and slow runoff potential.

Wood products

A few scattered ponderosa pine and juniper may occur on inclusions of deeper soil in higher precipitation areas. These provide little economic benefit in terms of wood products but are of some value for shade and diversity.

Other information

(Seedings/ Recommended Species)
Not suitable for artificial seeding due to shallow stony soils.

Contributors

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Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	Jeff Repp
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Date	07/30/2012
Approved by	Bob Gillaspy
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None to some, moderate sheet & rill erosion hazard

2. **Presence of water flow patterns:** None to some

3. **Number and height of erosional pedestals or terracettes:** None to some

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 10-15%

5. **Number of gullies and erosion associated with gullies:** None

6. **Extent of wind scoured, blowouts and/or depositional areas:** None, slight wind erosion hazard

7. **Amount of litter movement (describe size and distance expected to travel):** Fine - limited movement

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Moderately resistant to erosion; aggregate stability = 3-5

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Very shallow, well drained with areas of rock outcrop and with an extremely stony loam or a very stony silty clay loam surface; moderate OM (1-3%)

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Sparse ground cover (30-40%) and gentle slopes (2-20%) moderately limit rainfall impact and overland flow

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None

12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

    Dominant: Sandberg bluegrass > Bluebunch wheatgrass > Scabland sage > Bottlebrush squirreltail > Onespike danthonia > forbs > other grasses

    Sub-dominant:

    Other:

    Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Normal decadence and mortality expected

14. **Average percent litter cover (%) and depth (in):**

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Favorable: 600, Normal: 400, Unfavorable: 200 lbs/acre/year at high RSI (HCPC)

16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not**

invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site: Sandberg bluegrass and scabland sagebrush will increase with deterioration of plant community. Bulbous bluegrass, annual bromes, and medusahead invade sites that have lost deep rooted [erennial grass functional groups. Excessive erosion may occur, deteriorating site potential.

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17. **Perennial plant reproductive capability:** All species should be capable of reproducing annually

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